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King, Jr. et al.

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(54) **FLOATING DISPENSER**

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 533 days.

This patent is subject to a terminal disclaimer.

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(22) Filed: **Sep. 4, 2012**

(65) **Prior Publication Data**

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Related U.S. Application Data

(63) Continuation-in-part of application No. 13/507,114, filed on Jun. 5, 2012.

(60) Provisional application No. 61/687,001, filed on Apr. 16, 2012, provisional application No. 61/627,526, filed on Oct. 13, 2011, provisional application No. 61/627,528, filed on Oct. 13, 2011.

(51) **Int. Cl.**

B01F 3/12	(2006.01)
C02F 1/76	(2006.01)
B01F 1/00	(2006.01)
C02F 1/68	(2006.01)
B01F 13/00	(2006.01)
C02F 103/42	(2006.01)

(52) **U.S. Cl.**

CPC ***B01F 3/12*** (2013.01); ***B01F 1/0027*** (2013.01); ***B01F 13/0049*** (2013.01); ***C02F 1/688*** (2013.01); ***C02F 1/76*** (2013.01); *C02F 2103/42* (2013.01); *C02F 2201/006* (2013.01)

(58) **Field of Classification Search**

CPC C02F 1/687; C02F 1/688; C02F 1/76; C02F 2201/006; C02F 2103/42; B01F 1/0027; B01F 13/0049; B01F 2001/0061; B01F 3/12; B02F 2003/125

See application file for complete search history.

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(57) **ABSTRACT**

A floating dispenser having an external float or an internal float for supporting a cartridge or cartridges for floatingly delivering a dispersant or dispersants to a body of water with the floating dispenser having cartridges rotationally positionable with respect to one another to control the rate of dispensing while the dispenser floats in an upright condition with the floating dispenser changing its flotation orientation in response to consumption of the dispersant or dispersants in the cartridge or cartridges to thereby provide a visual alert to replace a spent cartridge with a fresh cartridge. In addition, the inventions described herein permit changing the dispensing nature of the system from a multiple dispensing system to a single dispensing system without changing the floating characteristics of the floating dispensers through replacement of a dispersant in one of the cartridges with an inert or ballast material that has no effect on the water characteristics.

10 Claims, 3 Drawing Sheets

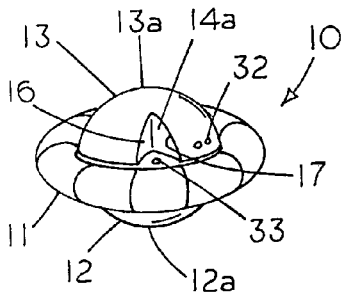


FIG. 1

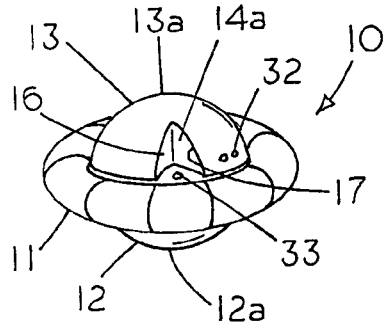


FIG. 1A

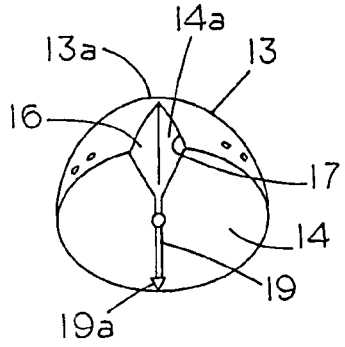


FIG. 1B

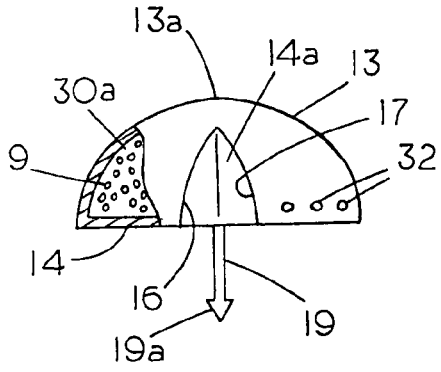


FIG. 1C

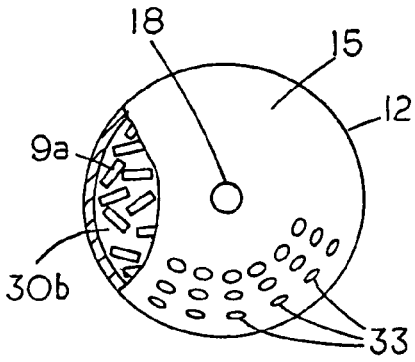


FIG. 1D

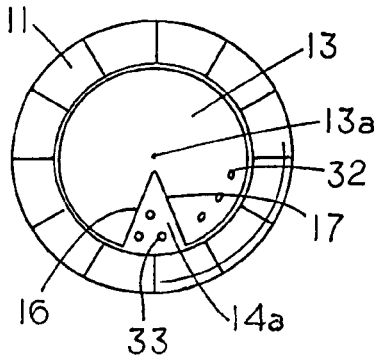


FIG. 2

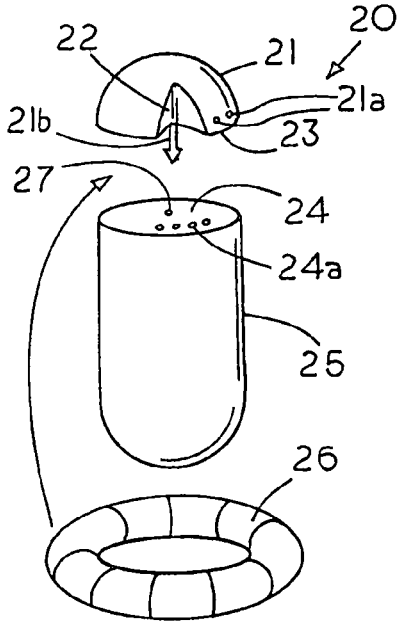


FIG. 3

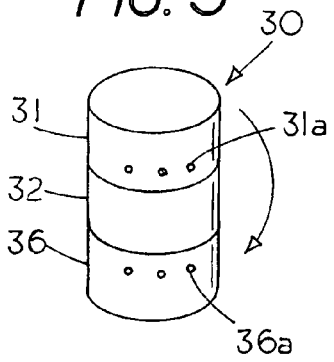


FIG. 4

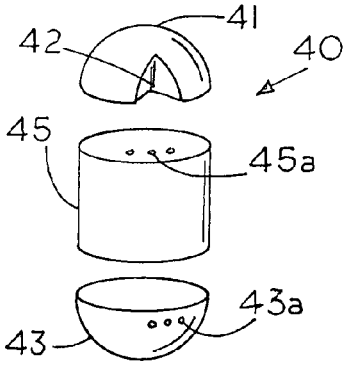


FIG. 5

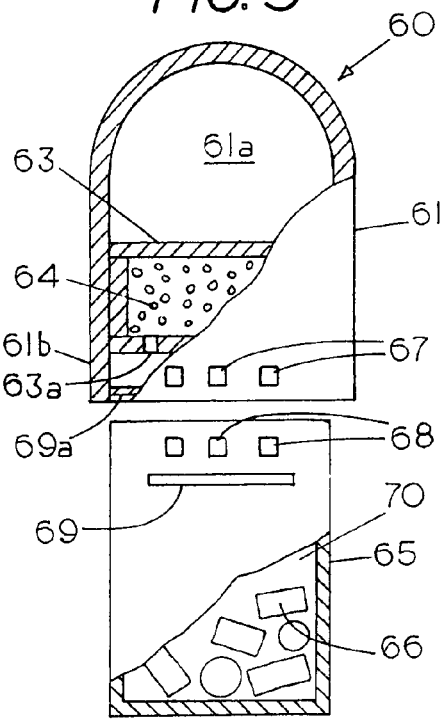


FIG. 5A

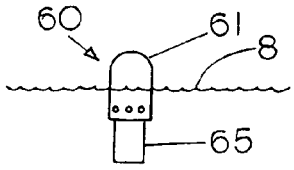


FIG. 5B

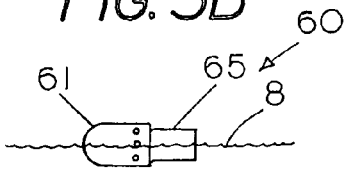


FIG. 5C

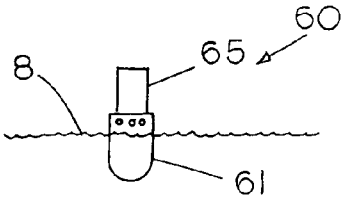


FIG. 5D

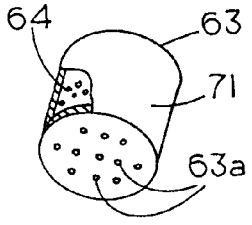


FIG. 6

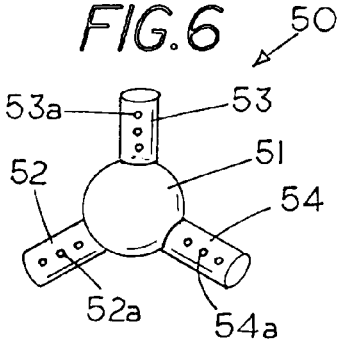


FIG. 7

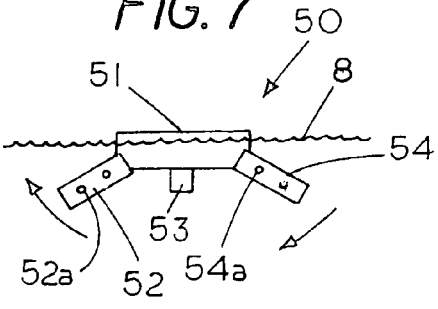


FIG. 8

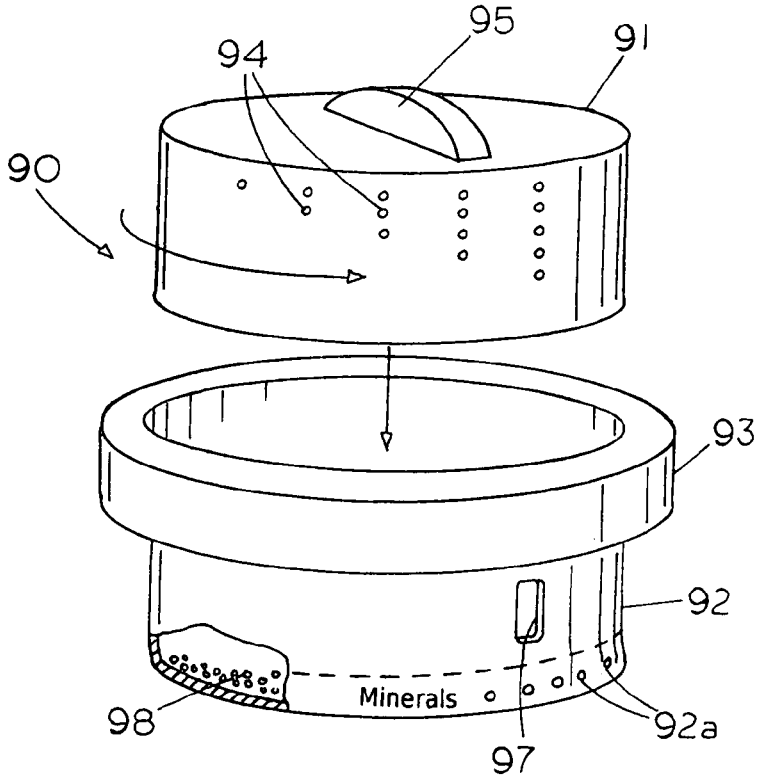


FIG. 9

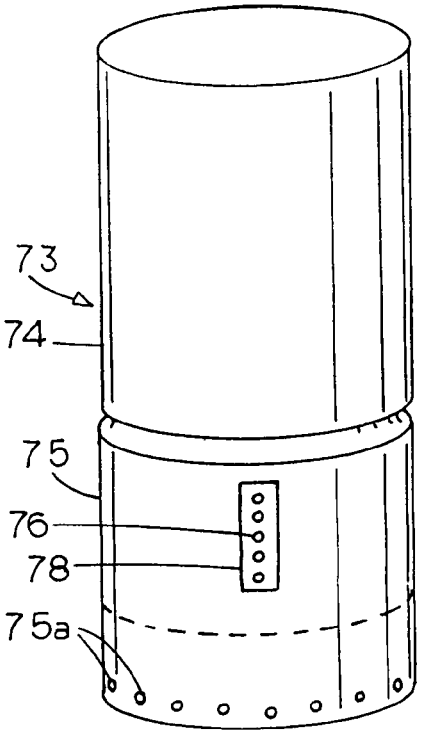
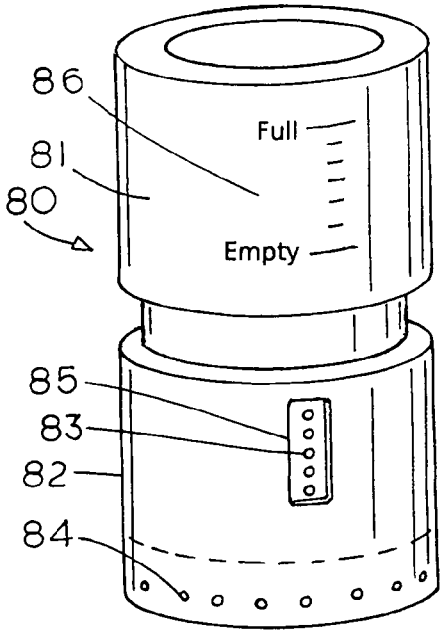


FIG. 10



FLOATING DISPENSER

CROSS REFERENCE TO RELATED APPLICATIONS

This application is a continuation-in-part of application Ser. No. 13/507,114 filed Jun. 5, 2012, which claims priority from provisional application Ser. No. 61/687,001 filed Apr. 16, 2012; this application also claims priority from provisional applications Ser. No. 61/627,526 filed Oct. 13, 2011, and Ser. No. 61/627,528 filed Oct. 13, 2011.

STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT

None

REFERENCE TO A MICROFICHE APPENDIX

None

BACKGROUND OF THE INVENTION

The concept of floating dispensers for delivering a dispersant or dispersants to a body of water is known in the art. In one type of floating dispensers the dispensers contain a halogen and float upright in a body of water until the halogen is consumed whereupon the dispenser flops on its side. In another type of dispenser the dispenser sinks to the bottom of the pool and remains there until the dispersant has been consumed at which time the dispenser floats to the top of the pool to alert the operator to replace the dispenser. In another type of a floating dispenser a nondissolvable weight, such as a marble, is included in the dispenser with the dispenser floating on its side when the dispersant is consumed. As the dispenser floats on its side the marble rolls along the interior of the dispenser and transfers the weigh to the end of the dispenser causing to dispenser to invert after the dispersant is consumed.

SUMMARY OF THE INVENTION

A floating dispenser having an external float or an internal float for supporting a cartridge or cartridges for floatingly delivering a dispersant or dispersants to a body of water with the floating dispenser having cartridges rotationally positionable with respect to one another to control the rate of dispensing while the dispenser floats in an upright condition. In some cases the floating dispenser changes its flotation orientation in response to consumption of the dispersant or dispersants in the a cartridge to thereby provide a visual alert to replace a spent cartridge with a fresh cartridge which can be done by removing the spent cartridge from the dispenser and attaching the fresh cartridge to the floating dispenser. While the dispensers shown herein are suitable for use in pools spas and the like, other uses may be found by those in the water treatment field. In addition the inventions described herein permit changing the dispensing nature of the system from a multiple dispensing system to a single dispensing system without changing the floating characteristics of the floating dispensers through replacement of a dispersant in one of the cartridges with an inert or ballast material that has no effect on the water characteristics.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a perspective view of a spherical floating dispenser;

FIG. **1**A is a perspective view of a top hemispherical dispensing cartridge of the floating dispenser of FIG. **1**;

FIG. **1**B is a side view of the hemispherical dispensing cartridge of FIG. **1**A;

FIG. **1**C is a top Figure is a top view of the bottom hemispherical dispensing cartridge of the floating dispenser of FIG. **1**;

FIG. **1**D is a top view of the floating dispenser of FIG. **1**;

FIG. **2** is an exploded view of cylindrical floating dispenser with hemispherical end caps;

FIG. **3** is a perspective view of a cylindrical floating dispenser with cylindrical end caps;

FIG. **4** is an exploded view of a floating dispenser with three compartments and hemispherical end caps;

FIG. **5** is a partial sectional view of a floating dispenser;

FIG. **5**A shows the floating dispenser of FIG. **5** floating in an upright condition;

FIG. **5**B shows the floating dispenser of FIG. **5** floating in a horizontal floating condition;

FIG. **5**C shows the floating dispenser of FIG. **5** floating in an inverted condition;

FIG. **5**D is an isolated view of an insertable ballast or dispersant container;

FIG. **6** shows a floating dispenser having a set of spoke cartridges;

FIG. **7** illustrates the rotation of the floating dispenser of FIG. **6** as the dispersant therein is consumed;

FIG. **8** is an example of a floating dispenser with a replaceable dispenser cartridge;

FIG. **9** is an example of a floating dispenser with a replaceable dispenser cartridge; and

FIG. **10** an example of a floating dispenser with a replaceable dispenser cartridge and a label for floatation alignment with a water line for indicating the amount of undissolved water treatment material in the replaceable dispensing cartridge.

DESCRIPTION OF THE PREFERRED EMBODIMENT

FIG. **1** shows a perspective view of a spherical floating status-indicating dispenser **10** for use in pools, spas or other bodies of water that require water treatment such as killing harmful organisms in the water or affecting other characteristics of the water by releasing a dispersant therein. Dispenser **10** comprises two hemispherical cartridges **12** and **13**, which are floatingly supported by a floatation ring **11** extending around the outer circumferential region of cartridges **12** and **13**. The first hemispherical dispensing cartridge or cap **13** having a circular base and a pole region **13***a* and the second hemispherical dispenser similarly, having a hemispherical cartridge or cap **12** having a pole region **12***a*. FIG. **1**A shows a perspective view of the hemispherical cartridge **13** revealing a circular base **14** having a pie shaped section removed therefrom and a central extension **19** extending from a central axis of the dispensing cartridge **12** while FIG. **1**B shows a side view of the hemispherical cartridge **13**.

FIG. **1**, FIG. **1**A and FIG. **1**B show that the first hemispherical cap or cartridge **13** contains a chamber **30***a* and a set of fluid openings **32** for ingress and egress of water to chamber, **30***a*, which for example, may contain a batch of minerals **9** for delivering metal ions into a body of water. Examples of minerals usable in dispensers may be found in U.S. Pat. No. 6,500,334, which is hereby incorporated by reference. Chamber **30***a* may be used to hold other materials including inert items, which are used for ballast in the dispenser **10** when the dispenser is changed from a dual dispensing mode to a single

dispensing mode. Located on the underside of cap **13** is the elongated extension **19** and a tapered head **19***a* that can be used to engage and rotationally secure hemispherical cartridge **13** to hemispherical cartridge **12** through a base-to-base relationship that permits one to rotate cartridge **12** with respect to cartridge **13** to select an appropriate dispensing rate. Typically, extension **19** holds the base **15** of cartridge **12** and base **14** of cartridge **13** in frictional engagement with each other to inhibit accidental rotation of cartridge **12** with respect to cartridge **13**. The purpose of limiting rotation between the two cartridges **12** and **13** to is use the static position of the base cartridge **13** with respect to the openings **33** in cartridge **12** as a means to select the number of openings **33** or the water flow through the openings located within a substantially hemi lune shaped gap **14***a*, which is formed between a substantially radial face **16** and a substantially radial face **17** of cartridge **13**. By selecting the openings **33** or the flow area one can control the flow of water into and out of dispensing cartridge **12** and consequently the dispersant rate if the dispensing cartridge contains a water sensitive dispersant. Examples of water sensitive dispersants includes minerals for releasing metal ions and other materials that can be dispersed into the water to affect the water characteristics although no limitation to materials that can effect the water characteristics is intended since the dispensing cartridge may in some instances be used for holding other types of dispersant materials that do not impact the water characteristics. On the other hand the openings **32** in dispensing cartridge may be fixed since the selection of openings in cartridge **12** allows one to coordinate the dispensing rates of the dispersants in cartridge **12** and cartridge **13**.

An example of use of a different type of material, which can affect the delivery of dispersants from the floating dispenser but not the operation of the floating dispenser, is the placement of inert materials or ballast in dispenser **12** which may be done without departing from the spirit and scope of the invention. That is ballast materials having a specific gravity greater than one, such as sand or the like, may be placed in cartridge **13** if one wishes to convert the dual dispensing system to a single dispensing system without affecting the flotation characteristics of the system. By employing a set of dispensing cartridges **12** and **13** that contain different materials one allows the user to replace one dispensing cartridge with another. For example, in one application a user may require minerals or the like that deliver metal ions, which are delivered from minerals contained in dispensing cartridge **13** and in another application the source of metal ions may not be required. The user can switch dispensing cartridge **13**, which contains minerals, for a dispensing cartridge that contains an inert material or ballast. Alternately, one has the option of using the compartment that normally contains the minerals for holding other water dispersants or extra halogen, which can lengthen the operational life of the dispenser. The replacement of a batch of minerals with a ballast allows the spherical dispenser to functionally float in the same manner without delivering a second dispersant into the body of water. In some cases one may use inert ballast and in other cases one may use active ballast such as limestone, which has lesser effect on the water treatment than the combination of minerals such as limestone and silver chloride.

FIG. **1**C shows the second hemispherical cap or cartridge **12** revealing the circular top surface or base **15** with a set of openings **33** therein for ingress and egress of water to cartridge **12**. A reference to FIG. **1** reveals how only those openings **33**, which are located in the space provided by lune shaped gap **14***a*, permit fluid communication to and from the materials in the dispensing cartridge **12**. FIG. **1**C shows a cutaway view of hemispherical cap **12** revealing a chamber **30***b* containing a plurality of halogen tablets or pucks **9***a*. While halogen tablets are shown as the dispensable materials other dispensing materials may be used therein without departing from the spirit and scope of the invention.

The use of floating dispensers allows for insitu treatment of a body of water by placing the dispenser directly in the body of water, which allows the material to be delivered to the body of water through the contact of the water with the dispensers. In some cases two or more materials may be used in a chamber of the dispenser with one dispensable material having a long-term dissolution rate and the other dispensable material having a rapid dissolution rate. For example, one can place alum together with a batch of minerals in one compartment. The alum, which dissipates quickly acts as a clarifier, while the minerals continue to deliver silver ions to the body of water over an extended period of time which can be weeks or months. Thus, the invention includes the method of using a floating dispenser to deliver two or more water affecting materials, which change the water characteristics, from the same compartment, one a short term dispersant and the other a long term dispersant. Another example, of using the floating dispenser compartment to deliver two dispersants or water affecting materials is the placement of dichlor (Dichloroisocyanuric acid) and trichlor (Trichloroisocyanauric acid) in the same compartment to achieve both a rapid and an extended water treatment. That is, the dichlor dissipates quickly and provides a shock treatment to the body of water while the trichlor release of chlorine into the body of water occurs over an extended period of time. In addition to the use of two dispersants the invention allows the carrying and delivery of multiple dispersants in the dispensing compartment. For example, one may place a chelator such as copper sulfate, a clarifier and zinc in the dispenser.

Base **15** of dispensing cartridge **12** includes a central located pocket **18** for receiving and axially restraining extension **19***a* while permitting rotation of the extension **19** along a central axis extending through extension **19** and through dispensing cartridge **12** and **13**. When the hemispherical cap **13** and the hemispherical cap **12** are in axial alignment and engaged with each other as shown in FIG. **1** they form a spherical floating dispenser **10** which is supported by an annular flotation collar **11** that is circumferentially external to the floating dispenser **10**.

FIG. **1** shows the first hemispherical cap **13** includes a substantially hemi lune shaped gap **14***a* formed between a set of substantially radial faces **16** and **17** in the first hemispherical cap **13**. The hemispherical cap **13**, which is rotatable with respect to the second hemispherical cap **12**, enables an operator to control the open water flow area through the selection of the open fluid ports **33** to the chamber **30***a*.

Extending circumferentially in an equatorial position around the hemispherical dispensing cartridge **12** and hemispherical dispensing cartridge **13** is the annular flotation collar **11**, which is secured to one or the other of the cartridges, preferably at the base of the cartridges to provide flotation to the cartridges **12** and **13** when they are assembled as shown in FIG. **1**. FIG. **1**D is a top view showing the annular flotation member **11** extending around the dispensing cartridge **13** to maintain both the cartridges in a condition where water can come into contact with the contents of the dispensing cartridges as they are supported by flotation ring **11**. The flotation ring **11** may be an inflatable ring or a solid buoyant material that has sufficient buoyancy so as to support the dispensing cartridge **12** and the dispensing cartridge **13** when both cartridges contain a dispersant. The flotation ring should support cartridge **12** and cartridge **13** at a level where the openings **32**

in dispensing cartridges **13** and the openings **33** in dispensing cartridges **12** are located below a water line to ensure that water comes into contact with the materials located in the chambers of the floating dispenser **10**.

In the example shown in FIG. **1** the hemispherical dispensing cartridges **12** and **13** are the same size with extension **19** holding the dispensing cartridges in a rotatable condition with respect to each other. The substantially hemi lune shaped opening **14***a* providing means for selecting the size of an open region in spherical cap **13** and for uncovering more or less ports **33** in the base **15** of spherical cap **12**. FIG. **1**C shows a partial cutaway view of dispensing cartridges revealing the chamber **30***b* therein with the dispersant **9***a* comprising pucks or tablets **9***a* of a halogen. In the assembled condition the circular face or base **15** of dispensing cartridge **12** and the circular base or face **14** of dispensing cartridge **13** are located in a face-to-face condition with each other.

While FIG. **1** shows dispensing cartridges of the same size FIG. **2** shows an example of a floating dispenser **20** where the floating dispenser includes dispensing cartridges of unequal size. In this example, the top hemispherical dispensing cap **21** includes a substantially hemi lune shaped gap **22** and a circular base **23** for forming face-to-face engagement with a top base **24** of the elongated cylindrical dispensing cartridge **25** in a manner identical to the dispensing cartridge **13** of FIG. **1**. The dispensing cartridge **25** typically may be used for holding a halogen such as chlorine or bromine. In this example extension **21***b* on dispensing cap **21** fits within a pocket **27** in an identical manner to the extensions and pocket of the floating dispenser **10**, which allows the larger dispensing cartridge **25** to be interchanged with the dispensing cartridge **12** of dispenser **13**. Top base **24** of dispensing cartridge **25** includes openings **24***a*, which provide egress and ingress to a chamber therein. The larger dispensing cartridge permits more material to be held therein and thus can extend the operational life of the dispenser. To compensate for the additional material the flotation collar **26** provided for dispensing cartridge may contain more flotation than the flotation collar **11**.

FIG. **2** shows the annular floatation collar **26** that attaches to the exterior of dispensing cartridge **25** to hold at least a portion of the top dispensing cartridge **21** containing openings **21***a* below a waterline. While floating dispenser **20** permits one to extended the dispensing life of the dispensers since the larger capacity of dispensing cartridge **25** allows one to hold a larger amount of halogen in the dispensing cartridge **25**, the rotational top hemispherical cap **21** also offers the user the flexibility to select the amount of dispersant from dispensing cartridge **21** since in some applications one may require more dispersant than in other applications.

As shown the annular flotation member **26**, which can be attached to the upper part of cartridge **25**, provides flotation for both of the dispensers **21** and **25**. The flotation member may be adhesively secured to the cartridge **25**, however, other means may be used to secure the flotation member **26** to the dispensing cartridge **21** or **25** in a position where the openings **21***a* and openings **24***a* remain below the water line.

FIG. **3** shows an example of another floating dispenser **30** with three identical but separate cylindrical members located in an end-to-end condition. In this example, a first cylindrical dispensing cartridge **31**, which has water openings **31***a*, may contain a dispersant such as minerals, a second cylindrical member or floatation chamber **32**, and a third cylindrical dispensing cartridge **36**, which has water openings **36***a* may contain a halogen. In this example when the halogen such as bromine is consumed the center of gravity of the floating dispenser shifts. That is while the weight of the material in the first dispensing material i.e. such as minerals or ballast, does not dissolve, the consummation of the halogen causing the center of gravity of the dispenser **30** to shift from the bottom cartridge to the top cartridge which causes the dispenser **30** to invert with the cylindrical dispenser **36** containing the empty halogen chamber appearing above the water line rather than the cylindrical chamber containing the minerals or ballast. By selecting different colors for the cylindrical dispenser cartridge **31** and **36** one can provide a visual indication that the halogen has been spent. For example, cartridge **31** with the nondissolvable materials, i.e. minerals or ballast, may be blue and the dispenser cartridge **36** may be red so that when the floating dispenser **30** inverts the appearance of the red cartridge **36** above the water line alerts an operator to replace the spent dispenser cartridge **36** in the floating dispenser **30**. While not shown dispensing cartridges **31** and **36** may be connected to floatation chamber **32** in the identical manner that dispensing cartridge **12** connects to dispensing cartridge **13**.

FIG. **4** shows another example of a floating dispenser **40** with three members. In this example the top member comprises a hemispherical cap **41** with a lune shaped gap **42** with the top member having an internal flotation chamber. Located below the hemispherical cap **41** is a cylindrical member **45** for containing a dispersant such as halogen and having openings **45***a*. Located below dispenser **45** is a second hemispherical cap **43** having openings **43***a* forming a mineral dispenser. In this example each of the members are secured to an adjacent member to form a single dispenser with the top spherical cap **41** rotatable with respect to middle dispenser **45** to control the open area of ports therein (not shown) to thereby control the amount of water coming into contact with the halogen in the halogen dispenser **45**. Floating dispenser **40** is characterized as a non-inverting dispenser since the dispenser remains in the same vertical orientation during the consumption of the halogens since the both the dispensing chamber and the halogen chamber are located below the water line. If desired floating dispenser **40** may be converted to a dispenser that changes its orientation through consumption of a dispersant or through position of a flotation chamber within dispenser **45**. With the floating dispenser **40** an operator has the option of changing the dispensing cartridge **45** to a flotation cartridge while hemispherical cap **41** and **43** become dispenser cartridges for water treatment materials. Floating dispenser **40** may then become an inverting dispenser similar to the floating dispenser **30** shown in FIG. **3**.

FIG. **5** shows a floating dispenser **60** comprising an upper member **61** having a buoyant chamber **61***a* for buoyantly supporting floating dispenser **60** in a body of water such as a pool or spa and a lower member **65** holding a dispersant **66**, such as a halogen therein. The lower portion of dispenser top **61** includes an annular lip **61***b* with a set of openings **67** that can be aligned with a set of openings **68** that extend into a chamber **70** in the member **65**. Member **65**, which is shown partially in section includes a cylindrical chamber **70** for holding a dispersant such as a halogen **66**. A ridge **69** on member **65** engages a groove **69***a* in the annular lip **61***b* to hold top member **61** in rotational engagement with member **65**. Rotation of member **61** with respect to member **65** aligns more or less of openings **68** with openings **67** to thereby control the amount of water that contact the dispersant in member **65**. Through the use of an container or pouch **63** the floating dispenser **60** can be converted to dispenser that delivers two dispersants rather than one dispersant or can also be converted into an inverting dispenser that inverts if only a single dispersant is present in dispenser **60**. In this example, pouch **63** is inserted into dispenser top **61**. The pouch **63** has a set of openings **63***a* and may contain a second dispersant

such as minerals, which release metal ions or the pouch **63** may contain an inert or ballast material **64**. The pouch **63** may be rigid or soft and may be held therein through frictional engagement. In either case the floating dispenser can be converted from a dispenser that flops when empty to a dispenser that inverts when the dispersants therein are spent. If the pouch contains a source of metal ions the conventional one dispersant dispenser becomes a two dispersant dispenser.

A reference to FIG. **5**A, FIG. **5**B and FIG. **5**C reveals the operation of dispenser **60** after a pouch or container has been inserted into dispenser **60**. FIG. **5**A shows the dispensing cartridge **61** in a full condition with the dispenser **60** floating in an upright condition with dispensing cartridge **65** located below the water line **8**, which is the interface between the water and the atmosphere. As the dispersant in dispenser **60** dissipates, the floating dispenser reaches a point where the dispensing cartridge **60** floats on its side as shown in FIG. **5**B. This would be the normal flop condition for dispenser **60** if the pouch or container was not present in dispenser **60**. However, with the pouch containing a ballast or dispersant that delivers a water treatment material without decreasing the mass of the dispersant, i.e. minerals or other materials that deliver metal ions. As the dispersant **66** continues to dissipate the dispenser **60** reaches a condition where the dispersant in the dispenser cartridge has been consumed. In this condition the ballast **64**, which was above the center of gravity of the dispenser **60** when the dispenser contained a dispensable material, would now be below the center of gravity of dispenser **60** causing dispenser **60** to invert to the condition shown in FIG. **5**C. Thus, through the addition to a pouch or container containing a second material the dispenser **60** can be converted from a flopping dispenser to an inverting dispenser that alerts a person that the dispenser needs a refill through the end for end inversion of the dispenser.

FIG. **5**D shows an isolated view of the container or pouch **63** that is inserted into floating dispenser **60** to convert the floating dispenser to either a floating dispenser that simultaneously delivers two dispersants or by selecting the proper weight of material a floating dispenser that will invert 180 degrees. Pouch **63** includes a cylindrical side-wall **71**, a material **64** and a set of openings **63***a* for ingress and egress of water. Alternately, the container or pouch **63** may contain an inert material or a material that has an effect on the water characteristics although the mass of the material remains stable. Examples of such materials include materials that deliver metal ions, such as minerals, which are commonly used in water treatment. Placement of weighted material in an upper chamber of dispenser **60** as illustrated in FIG. **5** may also be used to affect the flotation characteristics of the floating dispenser **60**. That is, if the buoyancy of the bottom member without the dispersant therein is greater than the buoyancy of the top member **61** the placement of a consumable dispersant **66** in a lower compartment chamber **70** with the weight of the consumable dispersant greater than the weight of the material in the upper compartment **61** of the dispenser **60** can cause the dispenser **60** to float in the condition shown in FIG. **5**A and when the dispersant **66** is consumed the dispenser **60** inverts to the condition shown in FIG. **5**C.

Thus the invention includes a method of water treatment of a pool or spa with a flotation dispenser **60** comprises the steps of placing a container **63** of material **64** in a water accessible compartment of a first member **61** of the floatation dispenser **60** wherein the material **64** maintains its mass during a dispensing cycle. Placing a water treatment material **66** such as a halogen in a water accessible compartment **70** of a second member **65** which is securable to the first member **61** with second water treatment material **66** having the characteristic of losing its mass during a dispensing cycle whereby the floating dispenser has a flotation axis in a first orientation when in a full condition as shown in FIG. **5**A and a second flotation axis in a visible different orientation (FIG. **5**B, FIG. **5**C) when the dispersant **66** in the second member loses its mass to the body of water.

FIG. **6** shows an example of another type of floating dispenser i.e. a floating spoke dispenser **50** where the presence of one or more of the spoke cartridges proximate the water line indicates that a spoke cartridge dispenser should be replenished. The floating spoke dispenser **50** comprises a cylindrical or spherical hub **51** forming a central cylindrical float with the hub **51** having a first dispenser cartridge **54**, which has openings **54***a*, in the shape of a cylindrical spoke extending radially outward from one side of hub **51**. Similarly a second dispenser cartridge **52**, which has openings **52***a*, and a third dispensing cartridge **53**, which has openings **53***a* with each in the shape of a cylindrical spoke extend radially outward from hub **51** with each of the cylindrical dispensing cartridges preferably located at equal horizontal angles of approximately 120 degrees with respect to an adjacent spoke cartridge. In the example shown, each of the spoke cartridges are of equal size, however, the spoke cartridges may be of different size or located at different angles with respect to each other without departing from the spirit and scope of the invention, however to obtain the benefit of visual observation that a spoke cartridge is empty the spoke cartridge should be positioned so that the vertical angle of the spokes with respect to the horizon becomes visible to an observer when the dispersant therein is consumed. Typically, an angle of 30 degrees allows one to visually determine when a cartridge has been spent. In this example the floating dispenser **50** includes a cylindrical shaped flotation member **51**; a first dispensing cartridge **54** extending radially from the flotation member **51**; a second dispensing cartridge **52** extending radially from the flotation member **51**; and a third dispensing cartridge **53** extending radially from the flotation member **51** with each of the dispensing cartridges having a central axis forming an acute angle with respect to a horizon to enable each of a set of ports **54***a*, **52***a* and **53***a* on each of the dispensing cartridges to be located below a water line **8** when a dispersant is present therein. In this example the spoke cartridges may be rotatably mounted to the hub for removal and insertion of a fresh cartridge.

FIG. **7** shows that the three spoke cartridges **52**, **53** and **54** each extend radially outward from hub **51** at an acute angle of about 30 degrees with respect to the water line **8**. In operation as a typical floating dispenser one of the spoke cartridge **54** may contain minerals, which releases metal ions into the body of water. The release of metal ions has little or no effect on the weight of the minerals in the spoke cartridge **54**. The other spoke cartridge **52** may contain a halogen such as bromine, which is dissolvable and dispersible into the body of water and which does have an effect on the weight of the dispensing cartridges **52** and spoke cartridge **53** may contain a third dispersant that is different from the other dispersants **53** or that may be same as another cartridge. Various types of materials may be used in each of the dispensing cartridges depending on the materials needed to affect the characteristics of the water. As the halogen in the spoke dispensing cartridges **52** and **53** are consumed the center of gravity of the floating dispenser **50** changes causing the heavier dispensing cartridge **54** with no consumables to rotate downward toward an under water vertical axis while each of the halogen spoke dispensing cartridges **52** and **53** rotate upward toward the water line **8** as indicated by the arrows. Consequently the

position of the spoke cartridges with respect to the water line **8** becomes an indicator of the need to replenish the halogen since the empty spoke cartridges will be visible on or at the water line **8**.

FIG. **8** shows an exploded view of further embodiment of a floating cylindrical dispenser **90** having a removable cylindrical top-dispensing member **91** having a handle **95** for rotating dispensing member **91** with respect to lower dispenser member **92**. Located within dispensing member **91** is a chamber therein for holding a water affecting dispersant such as a halogen with the dispensing member **91** having a set of fluid ports **94** to permit ingress and egress of water. The top cylindrical member **91** is rotatably mounted in a cylindrical opening in the lower dispenser member **92** while the external floatation collar **93**, which is located radially outward from the lower dispenser member **92**, provides buoyancy to the dispenser **90**. In this example the minerals **98** are located in the bottom of lower dispenser member **92** and the center of gravity of the unit remains below the water line whether the halogen chamber is empty or contains a halogen. Means such as shown in FIG. **1**B may be used to hold top cylindrical member **91** in a rotatable condition proximate lower dispenser member **92**.

To control the flow of water into the chamber in top member **91** one can rotate top cylindrical member **91** with respect to lower cylindrical member **92** thereby bringing more or less of openings into an exposed condition in window **97** thus allowing one to control the rate of dispersion of a dispersant such as a halogen through a change in the flow area. The lower cylindrical member **92** includes openings **92***a* to permit the ingress and egress of water therethrough to enable the dissipation of the metal ions into the water.

FIG. **9** shows a further example of a floating cylindrical dispenser **73** having a top cylindrical top member **74** having a replaceable halogen cartridge therein with a set of fluid ports **76** located in window **78** of the lower member **75**. The top cylindrical member **74** is rotationally mounted in an opening in the lower member **75**. In this example a flotation chamber is located internally in top cylindrical member **74**. In this example, the minerals are also located in the bottom of lower dispenser member **75** and the center of gravity of the unit remains below the geometric center whether they halogen chamber is empty or full. Fluid ports **75***a* permit water to flow into or out of the lower dispenser member **75**.

FIG. **10** shows a further example of a floating cylindrical dispenser **80** having a top cylindrical member **81** having a replaceable halogen cartridge (not shown) therein with a set of fluid ports **83** located in window **85** of the bottom cylindrical member **82** to permit water to come into contact with the halogen in top member **81**. The top cylindrical member **81** is rotatably mounted in an opening in the lower member **82**. In this example a flotation chamber may be located in top cylindrical member **81**. The minerals, which release metal ions, are also located in the bottom dispenser **82** of dispenser **80** and the center of gravity of the unit remains below the geometric center whether the halogen chamber is empty or full. To provide an indicating of the status of the halogen in the dispenser the cylindrical face of member **81** includes a set of float lines **86** that can be compared to the water line as the dispenser floats in a body of water. When the halogen is in an undissolved state the float line labeled by "full" will correspond with the water line.

As the halogen reaches a dispensed state the float line labeled "empty" corresponds with the water line thus alerting an operator that the halogen chamber should be refilled.

In the embodiments shown two dispensing cartridges are secured to each other to provide a floating dispenser, however, additional dispensing cartridges for other water treatment materials may be incorporated into the floating dispenser without departing from the spirit and scope of the invention.

While the invention has been described in regard to placement of a dispenser containing water affecting materials such as a halogen and minerals other dispersant may be used. If at least one of the water affecting materials is a water dispersible material that dissipates into the water form a container that floats in the body of water the floating condition of the dispenser **80** provides an indication when the dispersible material is spent. While each of the embodiments of FIGS. **8**,**9** and **10** contain means for adjusting the delivery of the water affecting characteristics in a body of water such as a pool or spa, it should be understood that the floating dispensers described herein may be used in other non-pool or non-spa applications where water conditions need correcting.

We claim:

1. A floating dispenser comprising:

a first hemispherical dispensing cartridge comprising a first hemispherical cap having a first chamber therein and a set of fluid openings therein for ingress and egress of water therethrough, said first hemispherical dispensing cartridge having a pole region and a base with the first hemispherical dispensing cartridge having a substantially hemi lune shaped gap formed between a set of substantially radial faces of said first hemispherical dispensing cartridge;

a second dispensing cartridge having a second chamber therein, said second dispensing cartridge having a base having a set of fluid openings therein for ingress and egress of water therethrough;

a flotation member;

a batch of non water dissolvable materials located in said first chamber; and a water dispersible material located in the second chamber whereby the batch of non water dissolvable materials in the first chamber and the water dispersible materials in the second chamber causes the center of gravity of the dispenser to be located in the second chamber thereby causing the first hemispherical dispensing cartridge to be normally located at least partially above a water line and the consumption of the water dispersible material in the second chamber transfers the center of gravity of the dispenser from the second dispensing cartridge to the first hemispherical dispensing cartridge to thereby alert an operator to replenish the water dispersible material in the floating dispenser.

2. The floating dispenser of claim **1** wherein the second chamber is larger than the first chamber.

3. The floating dispenser of claim **1** wherein the flotation member is located external to the first hemispherical cap.

4. The floating dispenser of claim **1** including an elongated cylindrical container secured to the first dispensing cartridges to form an enlarged chamber therein.

5. The floating dispenser of claim **1** wherein the first chamber includes minerals and the second chamber includes a halogen.

6. The floating dispenser of claim **1** wherein the first cartridge includes a central extension with a head for engaging the second dispensing cartridge to hold the base of the first dispensing cartridge and the base of the second dispensing cartridge in frictional engagement with each other to inhibit accidental rotation of the first cartridge with respect to the second cartridge.

7. The floating dispenser of claim **6** wherein the second dispensing cartridge includes a pocket for receiving and axi-

ally restraining the extension while permitting rotation of the first dispensing cartridge about a central axis extending through the extension.

8. The floating dispenser of claim **1** wherein the set of openings in the first cartridge are located in the hemispherical cap and the set of fluid openings in the second dispensing cartridge are located in a circular base of the second dispensing cartridge with selected openings of the set of openings in the circular base of the second dispensing cartridge visible in the substantially hemi lune shaped gap in the first dispensing cartridge when the first dispensing cartridge and the second dispensing cartridge are in engagement with each other.

9. The floating dispenser of claim **1** wherein the second dispensing cartridge comprises a hemispherical cartridge and the flotation member comprises an annular flotation collar located radially outward of the floating dispenser.

10. The floating dispenser of claim **9** wherein the annular flotation collar is adhesively secured to the floating dispenser.

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